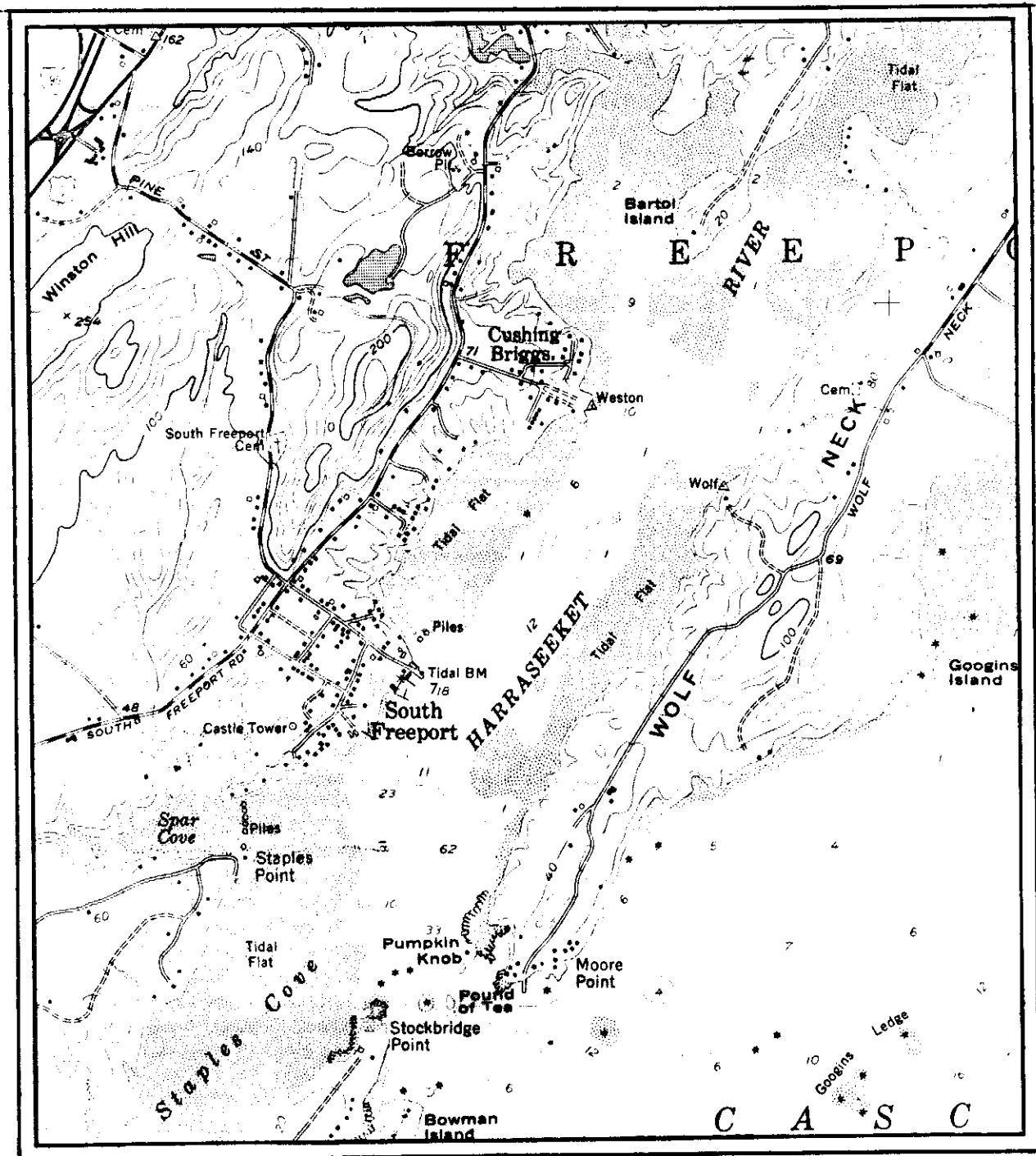


HARRASEEKET RIVER
FREEPORT HARBOR
FREEPORT, MAINE

SMALL NAVIGATION PROJECT
INITIAL APPRAISAL



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

OCTOBER 1985

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INTRODUCTION

This Initial Appraisal Report presents the results of a preliminary engineering and economic feasibility study of navigation improvements in the Harraseeket River.

The Harraseeket River is located in the town of Freeport, in Cumberland County, Maine, a popular coastal resort community about 17 miles north of the city of Portland. Freeport had a 1980 year-round population of 5,863. Access to Freeport is provided by Interstate 95, U.S. Route 1, and State Routes 136 and 125.

The Harraseeket River, as shown in Figure 1, is a wide tidal estuary and serves as the town's principal harbor. The town landing and most private docks and marinas are clustered together on the western shore of the river about 2.6 miles from the center of town at South Freeport. The river is reached from open water in Casco Bay through a narrow gut between Moore Point on Wolf Neck to the east and Stockbridge Point on the mainland to the west. The harbor is home to a large seasonal recreational fleet and serves as anchorage to a small number of commercial fishing boats.

STUDY AUTHORITY

This Appraisal Report was prepared and is submitted under the authority and provisions of Section 107 of the 1960 River and Harbor Act, as amended.

This investigation was initiated as a result of a request received from the town of Freeport, dated September 8, 1983 requesting that the Corps of Engineers study the feasibility of Federal participation in providing navigation improvements to the existing Federal project in the Harraseeket River under existing continuing authorities for small navigation projects.

PRIOR STUDIES AND IMPROVEMENTS

Federal - The existing Federal project for the Harraseeket River, adopted in 1890 and completed in 1896 is shown on Figure 2. The project provides for a channel leading from deep water in the Harraseeket River at Weston Point in South Freeport approximately 3,500 feet to a turning basin at Porter Landing. While only this 3,500-foot reach required dredging and defined channel limits, the downstream limit of the Federal project was designated as the entrance to the harbor from Casco Bay at Moore Point. The authorized channel has a width of 90 feet and a depth of -5 feet mean low water (MLW) and a center cut 70 feet wide by -8 feet MLW. No other Federal improvements have been made at the Harraseeket River.

The State of Maine has never conducted navigation improvements in the Harraseeket River. With the exception of the two public landings, wharves, piers, floats, dolphins and berthing area dredging, no local improvements to navigation have been made either.

EXISTING CONDITIONS AND PROBLEMS

The Harraseeket River is a small embayment on the northwestern shore of Casco Bay fed by several small streams. The river is bordered entirely by the town of Freeport and is the town's only harbor and site of two of the town's four public landings. One landing is at Porter Landing, the upstream limit of the existing Federal project. The second is the municipal wharf at the village of South Freeport.

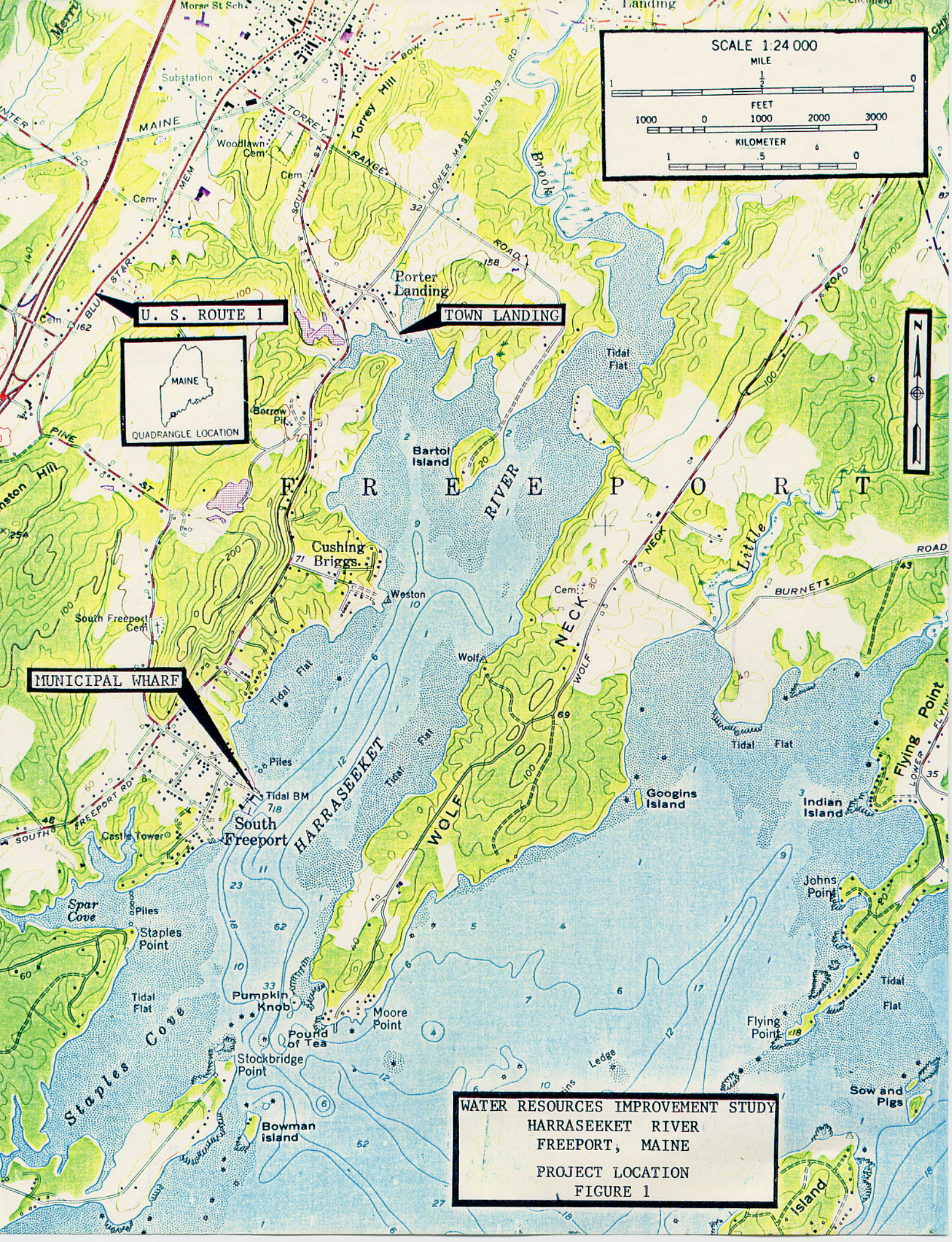
The geographic scope of this study was limited to the Harraseeket River estuary and bordering lands in the town of Freeport. The area is shown on U.S. Geological Survey 7-1/2 minute quadrangle titled Freeport, Maine and on U.S. Coast and Geodetic Charts #13290 - Casco Bay and #13288 - Monhegan Island to Cape Elizabeth. The mean tide range is approximately 9 feet.

The existing Federal project assumes open access from Porter Landing south to Casco Bay, a distance of about 26,000 feet. Only the upper 3000 feet were dredged. No channel limits were defined in the lower 23,000 feet of the river's natural channel.

There are approximately 610 recreational boats that use the Harraseeket River, of these 225 are berthed at slips at the three marinas at South Freeport and 10 use berths at private docks. There are 350 boats open moored in the channel between Weston Point and the Marinas. This is the current limit for moorings set by local statute. An overflow of 25 boats use moorings outside of Moore Point/Wolf Neck in Casco Bay. These boats are serviced by the marine launch service and marinas at South Freeport. The existing Federal channel serves the public ramp and boat-yard at Porter Landing in the upper reach of the navigable river. Boats using this area will not be included in any analyses since no modifications to the project in that reach are proposed or desired by local interests. The recreational boating season lasts 200 days from mid-April to late October. Transient craft visit the harbor during the summer months over the cruising season which lasts about 120 days. A waiting list of about 150 boats currently exists for mooring space.

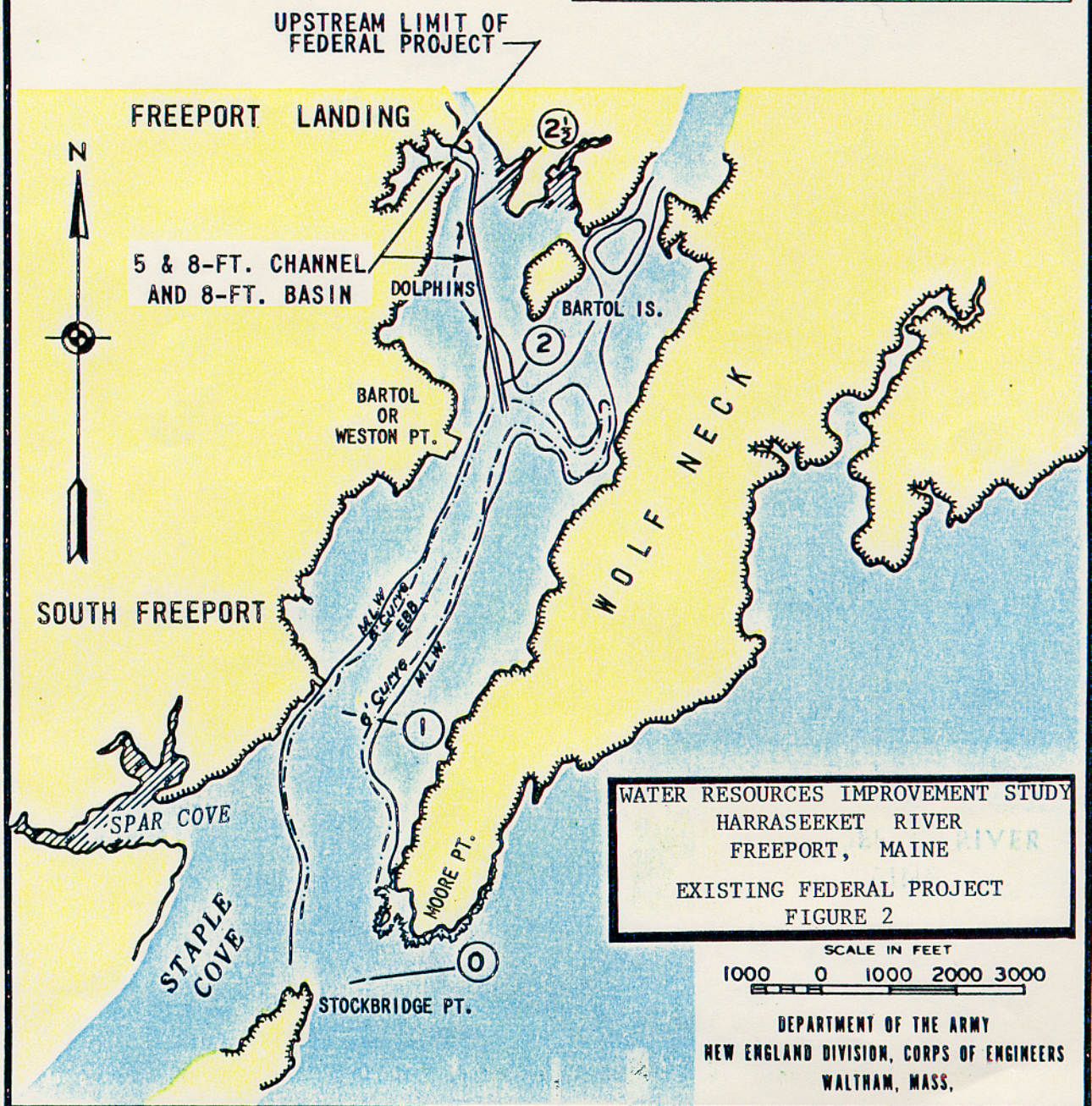
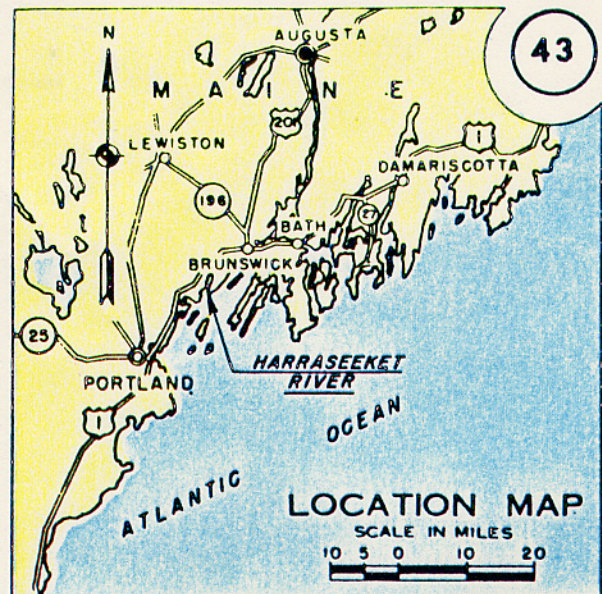
The local harbormaster assigns yearly moorings based on vessel draft. Deep draft boat are anchored in the deeper sections in the center of the river channel with drafts of moored boats decreasing towards the fringes of the available area. Because of shoaling, some boats at the outer limits of the available anchorage experience reduced recreational opportunity due to tidal delays and some experience grounding damages on extreme low tides.

The channel area opposite South Freeport is presently crowded with moored vessels during the recreational boating season. No defined anchorage areas exist and the majority of the river's area consists of shallow subtidal areas and tidal flats some of which are open to licensed harvesting of shellfish. Boats mooring in the channel area because of the



WATER RESOURCES IMPROVEMENT STUDY
HARRASEEKET RIVER
FREEPORT, MAINE
PROJECT LOCATION
FIGURE 1

MILES FROM A POINT ABREAST
OF MOORE POINT SHOWN THUS (3)



lack of adequate anchorage restrict navigation, causing congestion delays and increasing the risk and frequency of collisions between moored vessels and those underway while attempting to maneuver through the crowded channel.

The principal navigation difficulty is therefore a lack of available anchorage space with sufficient depth for open mooring of the Freeport recreational fleet. Provision of more anchorage would be necessary to alleviate the current overcrowding, congestion delays and damages which reduce the recreational value of the river to the boating public. Provision of additional anchorage area beyond that required by the existing fleet would allow for growth of the fleet and new recreational opportunities.

PLAN FORMULATION

Sufficient shallow areas below mean low water exist flanking the channel to provide anchorage through dredging without removing any intertidal flats and the shellfish populations they contain.

The entrance to this heavily used harbor is restricted by several rock pinnacles requiring vessels transiting the entrance to travel an S-shaped course. Groundings in this area are frequent at low tides for deeper draft sailboats. Removal of one or more of these pinnacles would improve navigational efficiency and reduce the risk of grounding while underway. Removal of two pinnacles would allow vessels transiting the entrance to only have to make one turn instead of the current 3 turns. The rock removed to reduce these pinnacles to a depth of about -12 feet MLW could be deposited immediately outside the harbor entrance off of Moore or Stockbridge Points to provide additional lobster habitat. Local lobstermen will be asked to recommend a suitable location.

The largest classes of boats using the Harraseeket River in the South Freeport vicinity are sail and power boats in the 28 to 42 foot ranges. These vessels commonly have beams of 10 to 14 feet and drafts of 6 to 7-1/2 feet. Delineating a channel with a width of 100 feet and depth of -10 feet MLW upriver to the municipal wharf at South Freeport would require no dredging except for removing the two pinnacles at the entrance. An anchorage area could be marked southeast of the channel and wharf to accommodate these vessels without dredging.

Delineating channel limits from the South Freeport wharf upstream to the existing Federal channel's downstream limits opposite Weston Point could also be accomplished without dredging if channel depths are kept to -8 feet MLW. This would restrict all tide use of this area to vessels needing no more than 8 feet of water to safely transit. Allowing for average wave heights of 1.5 feet, 0.5 feet for vessel squat and a safe underkeel clearance of 1.0 feet, vessels with a draft of 5 feet or less could safely use this area at all tidal stages. Anchorage for the majority of the fleet could be provided along the entire eastern limit of the channel, widening toward the municipal wharf. The anchorage would be sized to accommodate future growth and divided into a -8-foot MLW section

along the east channel limit. The shallow draft portion of the fleet which consists of those boats drawing 3.5 feet or less are currently moored together with those boats requiring eight feet of depth. Formation of a -6-foot MLW anchorage to the east of the -8-foot area would reduce the need to dredge a larger -8-foot area by segregating the shallow draft boats in their own anchorage. The -8-foot MLW section could be aligned so as to minimize and possibly eliminate dredging. Formation of the -6-foot MLW section would require dredging of subtidal areas. Anchorage areas would be sized on the basis of two-point mooring requirements. To provide anchorage in other areas would require extensive removal and alteration of intertidal area and destruction of the shellfish resources it contains.

Because of the rapid growth being experienced in the recreational boating industry, particularly in this most heavily used of Maine's recreational ports, there is tremendous potential for expansion of the recreational fleet at the Harraseeket River. Such growth could be expected to result in a future fleet with the same composition, in terms of size and classes of vessels, as the existing fleet. It has been estimated that if additional mooring space were provided and the local statutory limitation on moorings increased accordingly, than the fleet would experience an immediate increase of about 100 boats with a further 200 boat increase over a 10-year period of straight line growth.

ALTERNATIVE PLAN CHOSEN FOR EVALUATION

The first part of the plan involves delineating Federal channel limits from Casco Bay upriver to the existing Federal channel limits which begin at Weston Point while the originally authorized Federal project covered this entire distance, no actual channel limits were defined downstream of Weston Point. In order to facilitate sound harbor management, define anchorage areas and ensure safe and efficient open access to the harbor the limits of the Federal channel must be defined. Based on the sizes of vessels using the river channel depths and widths were designed to allow for safe and efficient access at all tide stages. Through proper harbor management all boats requiring greater than 8 feet of water could be confined to anchorage in naturally deep waters southeast of the South Freeport municipal wharf. Upstream from the wharf to Weston Point improvements would be sized to accomodate all boats requiring 8 feet of water or less. The existing Federal channel limits from Weston Point north 3500 feet to Porter Landing have a depth of -8 feet MLW over a width of 70 feet. This is considered sufficient for the types and volume of boat traffic in that area and no modifications in this reach are planned. The plan of improvement for the Harraseeket River consists of the following features.

1. A channel -10 feet MLW by 100 feet wide from Casco Bay, 6200 feet to the wharf area could be established without requiring dredging except for removal of two rock pinnacles at the river's mouth.

2. Defining anchorage limits to the east of the middle reach of this channel would require no dredging to delineate a -10-foot MLW anchorage sufficient to accomodate existing and any future deep draft boats requiring greater than 8 feet of water.

3. Establish a -8-foot MLW by 100 foot wide channel from the upstream limit of the -10-foot channel 4,700 feet to the downstream limit of the existing Federal channel limits would require no dredging.

4. An anchorage area would be located east of the new channel limits. The anchorage would consist of two areas, one -8 feet deep MLW along the channel and one -6 feet MLW landward east of the first.

The evaluated plan of improvement is shown in Figure 3.

ESTIMATE OF FIRST COSTS

The following assumptions were made relative to existing conditions and construction methods.

1. The construction of the two sections of channel would only require the blasting and removal by bucket dredge of the two rock pinnacles at the harbor entrance. This would entail removal of about 9,000 cubic yards (cy) of rock. Dredging of the -6 and -8-foot anchorage areas would require removal of 61,800 cy of ordinary material. These estimates assume 1 on 3 side slopes and a one foot overdepth in unconsolidated/ordinary material and 1 on 1 side slopes and a 2-foot overdepth in rock. Defining the two channel reaches and -10-foot anchorage area would be accomplished without dredging.

2. Quantity estimates were derived from NOAA Coast Charts and Corps hydrographic surveys.

3. Removal of the ordinary material would be accomplished by bucket dredge, with the dredged material loaded on scows and towed to an ocean disposal site. The nearest ocean site is the Portland Disposal Site located about 20 miles south of the dredge area.

4. The rock removed from the mouth of the harbor would be used for creation of lobster habitat at a site in Casco Bay.

5. The unit cost for removal of the ordinary material will be \$12.00 per cubic yard. The unit cost for removal of rock will be \$60.00 per cubic yard.

6. Shoaling rates for the dredged areas will be approximately 4 percent per year.

The U.S. Coast Guard would provide and maintain all aids to navigation. During any detailed study phase, specific numbers, locations and costs for navigation aids will be obtained from the Coast Guard. Table 1 depicts the first cost of the evaluated plan of improvement.

TABLE 1
ESTIMATED FIRST COSTS
EVALUATED PLAN OF IMPROVEMENT

Dredging and Disposal	
Ordinary material @ \$12.00/cy	
-8-foot anchorage 8,500 cy	\$ 102,000
-6-foot anchorage 53,300 cy	640,000
rock removal @ \$60.00/cy	
-10-foot channel 9,000 cy	540,000
Subtotal:	<u>\$1,282,000</u>
Contingencies 25%	321,000
Subtotal:	<u>\$1,603,000</u>
Engineering and Design	112,000
Supervision and Administration	128,000
Aids to Navigation 2 x \$4,000 each	8,000
TOTAL FIRST COST	<u>\$1,851,000</u>
Interest During Construction	14,000
(\$1,851,000 + 3 x 3.02197)	
TOTAL INVESTMENT COST	<u>\$1,865,000</u>

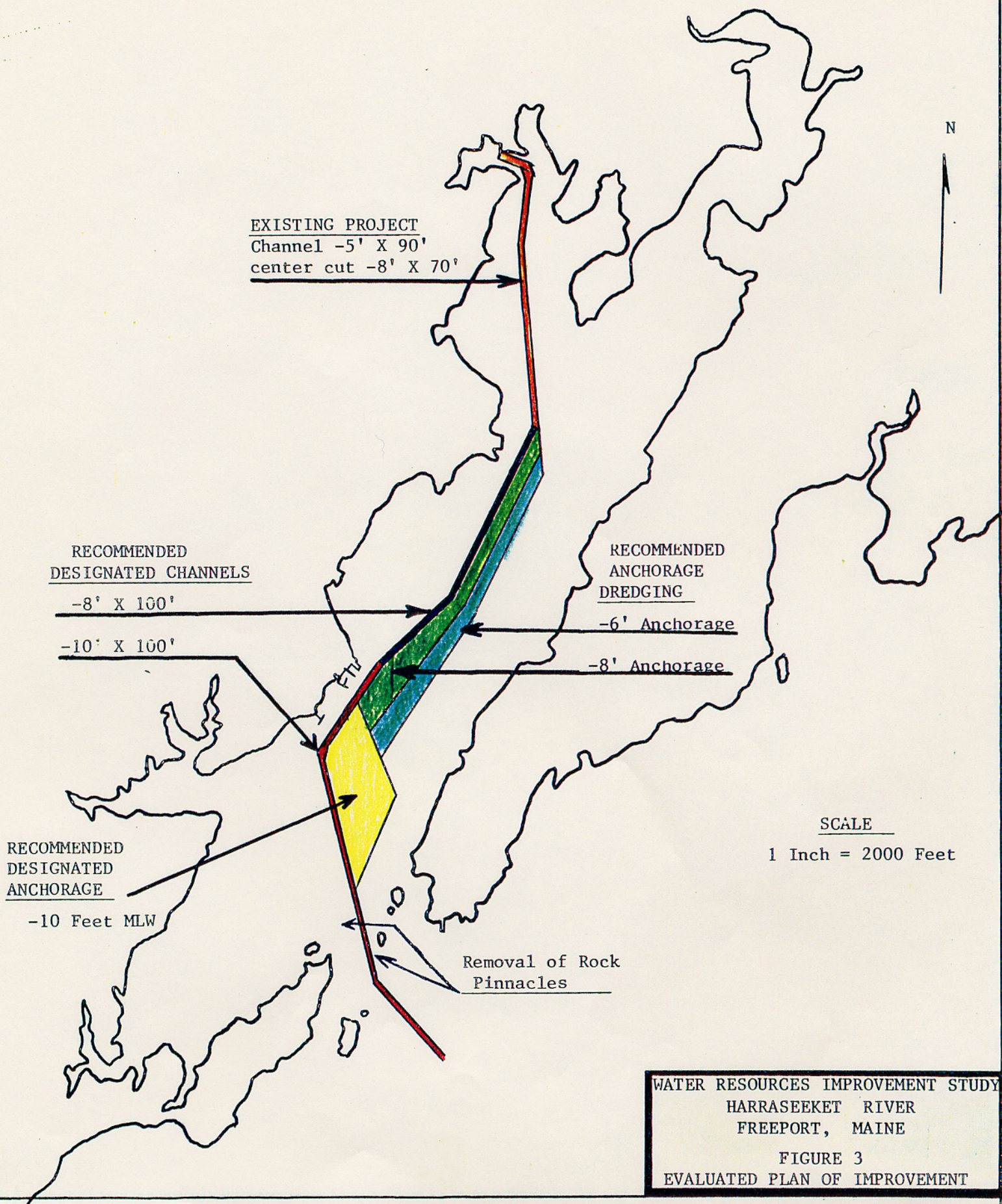
ESTIMATE OF ANNUAL CHARGES

Annual charges for amortization of the first costs of construction are based on an estimated project life of 50 years and an interest rate of 8-5/8 percent. It is estimated that maintenance dredging would be required once every 15 years or twice during the project life. An annual shoaling rate of 4 percent was assumed or about 2500 cy a year. It is assumed that disposal of maintenance spoils would be in the same manner as the improvement dredging disposal.

Maintenance of aids to navigation is the responsibility of the U.S. Coast Guard and specific costs will be obtained if a detailed study is performed. Annual charges for the evaluated plan are depicted in Table 2.

TABLE 2
ESTIMATE OF ANNUAL CHARGES
EVALUATED PLAN OF IMPROVEMENT

Interest and Amortization	
(\$1,865,000 x 0.08765)	\$163,500
Annual Maintenance Dredging	
2500 cy x \$13.00/cy	32,500
Maintenance of Aids to Navigation	
2 x \$500	1,000
TOTAL ANNUAL CHARGES	<u>\$197,000</u>



ESTIMATE OF ANNUAL BENEFITS

Navigation improvements in the Harraseeket River would result in significant benefits to the existing recreational fleet and commercial boat operators. Recreational benefits have been estimated on the basis of increased leisure time available to boat owners after elimination of congestion and tidal delays. Additional leisure time realized as the result of the anticipated increase in fleet size and transient visits has also been estimated. Benefits to commercial vessels are based on reduced operating/harvesting costs as a result of the elimination of tidal delays and reduced harbor congestion. Reduction in vessel damages has been considered for recreational vessels. All benefits have been computed in accordance with the Water Resources Council's "Principles and Guidelines" and with the established policies of the Corps of Engineers.

Recreational Benefits

The recreational fleet at Harraseeket numbers approximately 610 boats. There are 350 moored in the Harraseeket River which is the current limit set by local statute. An overflow of 25 additional boats are moored outside the river anchorage at Moore Point on Wolf Neck, but are serviced by the launch service and marinas at South Freeport. Approximately 225 boats are at slips at the 3 private marinas and 10 boats are at private berths and docks. A waiting list for mooring space in the Harraseeket River currently numbers 150 boats. South Freeport is also a popular port of call for cruising sailboats. There is a launch ramp for trailered boats. The commercial fleet consists of 10 lobster boats.

Benefits which accrue to the recreational fleet through increased navigational efficiencies and added anchorage capacity are measured as increases in the value of recreational time. The Unit Day Value method was employed to place a value on recreational time under the with-project and without-project conditions. The Unit Day Value method relies on expert or informed opinion and judgement to approximate the average willingness to pay of users of Federally assisted recreation resources. Points based on 5 levels of quantitative and qualitative judgement factors are estimated and applied to 5 recreation criteria both with and without the project. The points are totalled and converted to dollar values; the difference representing the addition to recreational value caused by the project.

Table VIII-3-2 from the Principles and Guidelines was used to estimate point values for general recreation and those points were converted to dollar values through the use of revised Table VIII-3-1 from EC 1105-2-144.

	<u>Without Project</u>	<u>With Project</u>
Recreation Experience	5	14
Availability of Opportunity	4	10
Carrying Capacity	6	12
Accessibility	8	14
Environmental Quality	14	18
Total Points	37 = (\$2.88)	68 = (\$4.14)

Efficiencies gained by the commercial fleet were measured as time savings in terms of fuel and labor cost savings. Labor costs were valued at \$10.00 and \$7.00 per hour and fuel costs at \$6.00 per hour.

1. Reduced Tidal Delays - (20% of Moored Fleet)

Twenty percent of the 375 boats moored fleet face tidal delays. This is due to the shortage of deepwater mooring space for the larger (28' - 50') sailboats. The recreational time lost while waiting for sufficient water depth to enter and exit the mooring area results in an existing unit day value of \$2.88. With the project these vessels will be able to operate at all stages of tide and realize an increase in unit day value to \$4.14. The annual benefit to the 75 vessels (375 x .20) is \$17,000 based on average boat use of 40 days and an average of 4.5 persons on board.

With Project:	75 boats x 40 days x 4.5 people x \$4.14 =	\$55,890
Without Project:	75 boats x 40 days x 4.5 people x \$2.88 =	38,880
	Benefit =	\$17,010

2. Reduced Harbor Congestion - (80% of moored fleet)

The remaining 80 percent of the 375 boat fleet does not face tidal delays but does encounter delays due to the crowded mooring conditions especially in and near the channel. With the project the channel will be delineated, a mooring plan implemented and additional mooring space provided. This will increase the unit day value from \$2.88 to \$4.14 resulting in a total annual benefit of \$60,500. The 300 boats (375 x .80) in this fleet are slightly smaller than those that face the tidal delays so 4 people per boat was used in the benefit calculation.

With Project:	300 boats x 40 days x 4 people x \$4.14 =	\$198,720
Without Project:	300 boats x 40 days x 4 people x \$2.88 =	138,240
	Benefit =	\$60,480

3. Reduced Harbor Congestion - Fleet at Marinas

The 225 boats that are at slips at the marinas also will benefit with the project as their transit time to and from the slips will be reduced due to less congestion in the mooring area and channel. These boats are somewhat smaller than the moored vessels therefore an average of 3.5 people per boat will be used in the benefit calculation. Annual benefits to this fleet total \$39,700.

With Project:	225 boats x 40 days x 3.5 people x \$4.14 =	\$130,410
Without Project:	225 boats x 40 days x 3.5 people x \$2.88 =	90,720
	Benefit =	\$39,690

4. Reduced Harbor Congestion - Transient Vessels

South Freeport, Maine is a popular port of call for vessels cruising the Maine coast during the summer months. Knowledgeable locals report that approximately 70 vessels per week visit during the 12 week Maine cruising season from mid June to early September. These larger

cruising boats benefit from the harbor improvements just as the South Freeport boats do resulting in an annual benefit of \$4,800.

With Project:	70 boats/wk x 12 wks x 4.5 people x \$4.14 =	\$15,649
Without Project:	70 boats/wk x 12 wks x 4.5 people x \$2.88 =	<u>10,886</u>
		Benefit = \$4,763

5. Reduction in Damage - Moored Fleet

Local sources indicate that one-half of the moored fleet experiences damage each year due to grounding or congestion. It is estimated that \$200 per boat per year, on average is spent on repairs due to existing navigation conditions on the river which would be reduced through project implimentation. The types of damage are to hulls, keels, propellers and mooring lines. The proposed harbor improvements should prevent about 80 percent of these damages. Weather, piloting and other factors are exogenous and can not be controlled. The benefit due to damages prevented is \$30,000.

With Project: 375 boats x 50% x \$200/boat x 80% reduction = \$30,000

6. Future Additions to Recreational Fleet

The recreational fleet at South Freeport has grown at an average rate of 10 percent over the past decade. The result of this growth is that the mooring limit of 350 vessels in the Harraseeket River has been reached. An overflow of 25 vessels is currently accommodated at Moore Point on Wolf Neck and a waiting list of 150 exists for moorings. The private marinas are also full. The closest harbors to South Freeport, Royal River/Yarmouth and Falmouth Foreside are also full to capacity. The harbor improvements at South Freeport will create two new anchorage areas of 27 and 34 acres respectively that will accommodate a total of 300 boats. Interviews with knowledgeable locals indicate that the 300 moorings will be taken by 50 percent new boats and 50 percent transfers. Based on the waiting list of 150 names, it is estimated that 50 new boats and 50 transfers will be added immediately upon project completion. It is further projected that 10 new boats and 10 transfers will be added each year for the first 10 years of project life after which the Harraseeket River will again be at capacity. Benefits are estimated separately for the immediate and future additions for both the new and transfer boats.

7. New Boats - Immediate Additions to Fleet

The new boats will realize the full unit day value of \$4.14 with the project. Based on 40 days of use and 4 persons per boat the benefit is \$33,100.

With Project:	50 boats x 40 days x 4 people x \$4.14 =	\$33,120
Without Project:		0
		Benefit = \$33,120

8. New Boats - Future Additions to Fleet

Ten new boats will be added per year for the first ten years of project life. The total discounted annual benefit is \$46,600

With Project:

$$10 \text{ boats/yr} \times 10 \text{ yrs} \times 40 \times 4 \times \$4.14 \times (.70405 \text{ AAEF}) = \$46,636$$

Without Project:

$$\begin{array}{r} 0 \\ \text{Benefit} = \$46,636 \end{array}$$

9. Transfer Boats - Immediate Additions to Fleet

It is projected that 50 boats will transfer to the new mooring areas upon project completion. The boats will come from nearby crowded anchorages and some will be previously trailered boats. Since these boats are already in use and would not transfer to Harraseeket unless their recreational value was perceived to be less than ideal, the benefit per boat-user is the increase in the with versus without project unit day values from \$2.88 to \$4.14. The amount benefit is \$10,100.

$$\text{With Project: } 50 \text{ boats} \times 40 \text{ days} \times 4 \text{ people} \times \$4.14 = \$33,120$$

$$\text{Without Project: } 50 \text{ boats} \times 40 \text{ days} \times 4 \text{ people} \times \$2.88 = \$23,040$$

$$\text{Benefit} = \$10,080$$

10. Transfer Boats - Future Additional to Fleet

Ten transfer boats will be added per year to the fleet for the first time years of project life. The total discounted annual benefit is \$14,200.

With Project:

$$10 \text{ boats/yr} \times 10 \text{ yrs} \times 40 \times 4 \times \$4.14 \times (.70405 \text{ AAEF}) = \$46,636$$

Without Project:

$$10 \text{ boats/yr} \times 10 \text{ yrs} \times 40 \times 4 \times \$2.88 \times (.70405 \text{ AAEF}) = 32,443$$

$$\text{Benefit} = \$14,193$$

Commercial Benefits

The latest count of commercial lobster boats that operate out of South Freeport is 8 full time and 4 part time. An equivalent of 10 boats will be used for benefit calculation. Expansion of the anchorage area and marking of the channel would reduce congestion thereby reducing the transit time for the commercial fleet between the docks and moorings and the fishing areas. The time saved would not be of sufficient magnitude to result in increased catch, but would reduce each vessels' variable operating cost. Without the project each lobster boat encounters and additional 20 minutes round trip of travel time due to channel and

anchorage congestion and an additional 30 minutes on weekends. The extra travel time is eliminated with the project resulting in savings of fuel and labor costs. The fleet operates, on average, 6 days a week for 30 weeks. The total annual time saving for the 10 boat fleet is 650 hours with the project (10 boats x 30 weeks x 130 min./wk ÷ 60 min. = 650 hours)

1. Fuel Savings

Fuel costs are about \$6.00 per hour for the 30 foot boats at South Freeport. The total annual fuel cost saving for the fleet is \$3,900. (650 hrs. x \$6.00)

2. Labor Savings

The approximate equivalent wage for the captain/owner is \$10/per hour and \$7 for the crewman (sternman). The total annual savings in labor based on a two man crew for the 10 boat fleet is \$11,050. (650 hrs. x \$17.00)

Summary of Benefits

The total annual benefits that would accrue to improvements in the Harraseeket River are \$271,500 and are displayed by category in the table below.

TABLE 3
ESTIMATED ANNUAL BENEFITS

	<u>Dollar Value</u>
<u>Annual Benefit</u>	
<u>Recreational Benefits</u>	
Reduced Tidal Delays - (20% of Moored Fleet)	\$17,000
Reduced Harbor Congestion - (80% of Moored Fleet)	60,500
Reduced Harbor Congestion - (Fleet at Marinas)	39,700
Reduced Harbor Congestion - (Transient Vessels)	4,800
Reduced Damages - (Moored Fleet)	30,000
New Boats - Immediate Additions	33,100
New Boats - Future Additions	46,600
Transfer Boats - Immediate Additions	10,100
Transfer Boats - Future Additions	<u>14,200</u>
Subtotal	256,000 (94%)
 <u>Commercial Benefits</u>	
Fuel Savings	3,900
Labor Savings	<u>11,100</u>
Subtotal	15,000 (6%)
 TOTAL ANNUAL BENEFITS	\$271,000 (100%)

COMPARISON OF BENEFITS AND COSTS

A proposed project's contribution to the national economic development is measured by comparing the project's annual benefits and costs as a ratio. If the benefit-cost ratio (BCR) is greater than or equal to 1:1, the project is considered to have a net positive effect on the national economic development.

The BCR for the evaluated plan of improvement is presented below:

<u>BENEFIT - COST COMPARISON</u>			
<u>Annual Benefits</u>	<u>Annual Costs</u>	<u>Benefit/Cost Ratio</u>	<u>Net Annual Benefits</u>
\$271,000	\$197,000	1.4:1	\$74,000

APPORTIONMENT OF COSTS

The first cost of construction of the evaluated plan of improvement is apportioned between Federal and non-Federal interests in proportion to commercial and recreational benefits. The first cost of construction for that portion of the project for which benefits are accrued by the commercial fleet would be borne entirely by the Federal Government. The first cost for that portion which accrues benefits to the recreational fleet are apportioned 50 percent Federal and 50 percent non-Federal. Based on first costs for improvements and all quantified benefits associated with the evaluated plan of improvement, apportionment of costs is 53 percent Federal and 47 percent non-Federal.

FEDERAL RESPONSIBILITIES

Of the first cost of construction, 53 percent would be a Federal responsibility because of the mixed commercial-recreational fleet. All costs of future maintenance of the Federal improvement project, assuming continued justification, availability of funds, and environmental acceptability would also be a Federal responsibility. The Federal cost, based on this preliminary analysis, would be \$981,000.

LOCAL RESPONSIBILITIES

Local interests would be required to:

1. Provide a cash contribution toward construction costs, determined in accordance with existing policies for regularly authorized projects, in view of recreational benefits, land enhancement benefits, or similar type

special and local benefits expected to accrue. The present basis for cost-sharing in recreational small-boat projects provides that the Federal Government will bear not more than 50 percent of the first cost of general navigation facilities serving recreational traffic. The evaluated plan of improvements results in benefits to both commercial and recreational concerns. Since recreational benefits account for 94 percent of the total benefits, the local cash contribution will equal 47 percent of the first cost of construction of the Federal project.

2. Provide, maintain, and operate without cost to the United States an adequate public landing with provisions for the sale of motor fuel, lubricants, and potable water open and available to the use of all on equal terms.

3. Provide without cost to the United States all necessary lands, easements, and rights-of-way required for construction and subsequent maintenance of the project including suitable dredged material disposal areas with necessary retaining dikes, bulkheads, and embankments therefore.

4. Hold and save the United States free from damages that may result from construction and maintenance of the project.

5. Accomplish, without cost to the United States, alterations and relocations as required in sewer, water supply, drainage, and other utility facilities.

6. Provide and maintain berths, floats, piers, and similar marina and mooring facilities as needed for transient and local vessels as well as necessary access roads, parking areas, and other needed public use shore facilities open and available to all on equal terms. Only minimum, basic facilities and services are required as part of the project. The actual scope or extent of facilities and services provided over and above the required minimum is a matter of local decision. The manner of financing such facilities and services is a local responsibility.

7. Assume full responsibility for all project costs in excess of the Federal cost limitation of \$2,000,000.

8. Establish regulations prohibiting the discharge of untreated sewage, garbage, and other pollutants in the waters of the harbor users thereof, which regulations shall be in accordance with applicable laws or regulations of Federal, State and local authorities responsible for pollution prevention and control.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

As the result of the preliminary analyses contained in this report, it appears that there is an economically feasible plan for construction of improvements to the existing Federal navigation project in the Harraseeket River at Freeport, Maine. Local interests strongly support such navigation improvements which would relieve the increasingly hazardous navigation conditions encountered during the recreational boating season. The proposed plan of improvement described in this report represents the most economically optimal plan that has been identified. The channel alignments are dictated by the location of the existing local shore facilities and existing deepwater portions of the river. Based on these preliminary analyses, the evaluated plan appears to be engineeringly feasible and environmentally acceptable. More detailed analyses would have to be conducted before any final recommendation could be made.

Recommendation

In view of the favorable findings in this report, further study of navigation improvements in the Harraseeket River at Freeport, Maine is recommended.

TOWN OF FREEPORT

Municipal Offices

(207) 865-4743



Dale C. Olmstead, Jr.
Town Manager
(207) 865-4856

Carl B. Sciple
Colonel of Engineers
New England Division -
Army Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02154

September 8, 1983

Re: Town of Freeport, State of Maine,
Request for Dredging Project

Dear Colonel Sciple:

Please be advised that at a meeting of the Freeport Town Council held September 6, 1983, the following resolution was adopted by the Town Council:

"That in accordance with the provisions of Section 107 of the Rivers and Harbors Act of 1960, the Town Council, acting on behalf of the Town of Freeport, State of Maine, hereby requests the Army Corps of Engineers to investigate the feasibility of dredging for additional anchorage in the Harbor."

Sincerely,

Dale Olmstead
Town Manager

DO:mw



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

November 12, 1985

REPLY TO
ATTENTION OF

Planning Division
Coastal Development Branch

Mr. Dale C. Olmstead, Jr.
Town Manager
Municipal Offices
Freeport, Maine 04032

Dear Mr. Olmstead:

Reference is made to your September 8, 1983 request for this office to undertake a navigation study for Harraseeket River, Freeport, Maine under the authority of Section 107 of the 1960 River and Harbor Act, as amended.

In response to your request, an Initial Appraisal was undertaken to determine the feasibility and justification for Federal involvement. It has been determined that the proposed navigation improvements for recreational boating and commercial fishing appear economically feasible, and a detailed study is warranted. It is emphasized, however, that this determination is only preliminary in nature and no final decisions have been made as to the overall feasibility of the proposed action. Such a determination will be made upon completion of the final stage of study known as a Detailed Project Study which will include an assessment of economic and engineering feasibility, environmental impacts, and social and cultural effects.

Enclosed is a list of eight items of local cooperation which a community participating in a navigational improvement authorized under Section 107 must agree to meet before project implementation. If a favorable plan of improvement is recommended in the Detailed Project Report and authorized by the Chief of Engineers, you would then be required to enter into a contractual agreement to meet these items of local cooperation during the preparation of plans and specifications prior to construction.

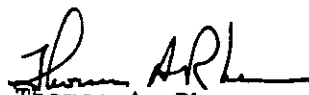
You should be aware of cost sharing formulae that have been proposed to go into effect for fiscal year 1986 which begins October 1, 1985. This proposal would require the local sponsor to share the cost of the Detailed Project Study as well as the cost of engineering, construction and subsequent maintenance of the project.

If the local sponsor is required to share the cost of the Detailed Project Study, an assessment of the level of support and willingness of the sponsor to share this cost will be determined during our next phase of study which is a 100% Federally funded reconnaissance-level investigation.

At this time, the recommendation indicated in paragraph 2 above will be forwarded to the Office of the Chief of Engineers. Should it be approved, Harraseeket River will be placed on our list of pending project studies and work will proceed when funds become available.

Should you have any questions, please feel free to contact me at (617) 647-8220 or Mr. Mark Habel, the Project Manager for this investigation at (617) 647-8525.

Sincerely,

A handwritten signature in dark ink, appearing to read "Thomas A. Rhen". The signature is fluid and cursive, with the first name "Thomas" and last name "Rhen" clearly distinguishable.

Thomas A. Rhen
Colonel, Corps of Engineers
Division Engineer

Enclosure



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

REPLY TO
ATTENTION OF

NEDPL-C

12 November 1985

SUBJECT: Harraseeket River, Freeport, Maine
Initial Appraisal CWIS 87482

CDR USACE (DAEN-CWP-E)
20 Mass. Ave., N.W.
Washington, DC 20314-1000

1. Enclosed are four copies of subject report concerning small navigation improvements completed under the authority of Section 107 of the 1960 River and Harbor Act, as amended. The report indicates that a plan of improvement appears justifiable.
2. In accordance with ER 1105-2-10 the positive investigation being transmitted defines the problems and opportunities of the study area and identifies a potential solution. Based on a preliminary appraisal of costs, continued Federal interest is justified. A letter has been sent to the town of Freeport informing them of the completion of the Initial Appraisal and the proposed cost sharing formulae for FY 1986. A copy of this letter is enclosed.
3. It is requested that 96X3122, Construction General, Code 902-216 funds in the amount of \$7,500 be provided at this time to reimburse the revolving account for expenditures to date. Funds necessary to accomplish the Reconnaissance phase of the study will be requested when capabilities allow. A study cost estimate is also enclosed.

THOMAS A. RHEN

Colonel, Corps of Engineers
Commanding

Enclosure

CONTINUING AUTHORITIES STUDY COST ESTIMATE (\$000)		APPROPRIATION TITLE: Construction, general			NAME OF STUDY AND AUTHORITY Harraseeket River, Freeport, Maine		
		CATEGORY			SUBCLASS		
		CLASS					
LINE NO.	SUBACCOUNT		CURRENT COST ESTIMATE		PREVIOUS FEDERAL COST ESTIMATE AND DATE APPROVED ()	REMARKS	
	NUMBER	TITLE	RECON	DETAILED PROJECT STUDY			
				FED			TOTAL
				a			b
1		Preliminary Planning and Public Contact	4	12			
2		Surveying and Mapping	16	13			
3		Environmental Sampling and Testing	17	16			
4		Foundations and Materials Investigations	-	16			
5		Design and Cost Estimates	4	18			
6		Economic Studies	5	19			
7		Environmental Effects Assessment	5	17			
8		Study Management	7	28			
9		Fish and Wildlife Coordination	-	5			
10		Preparation of Report	2	11			
11							
12							
13							
14		TOTAL	60	155			
DATE PREPARED Sept. 85		DIVISION NEW ENGLAND DIVISION			REGION		
		DISTRICT			BASIN		


DAEN-CWP-E (12 Nov. 85) 1st End
SUBJECT: Harraseeket River, Freeport, Maine
(Initial Appraisal,) CWIS #87482

HQ, U.S. Army Corps of Engineers, Washington, D.C. 20314-1000 9 JAN 1986
TO: Commander, New England Division, ATTN: NEDPL-C

I approve the subject Initial Appraisal as the basis for undertaking reconnaissance studies. The attached comments are provided for consideration during advanced studies. Subject to availability, funding will be provided by separate correspondence.

FOR THE COMMANDER:

2 Encls
wd encl 1
Added 1 encl


L. H. BLAKEY
Chief, Planning Division
Directorate of Civil Works